

Title Methyl jasmonate plays a role in fruit ripening of 'Pajaro' strawberry through stimulation of ethylenebiosynthesis

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Abstract

The role of methyl jasmonate (MJ) in strawberry (*Fragaria × ananassa* Duch. cv Pajaro) fruit ripening was investigated by monitoring its endogenous concentrations in fruit at various stages of development and the effects of exogenously applied MJ at these stages on ethylenebiosynthesis. The concentration of endogenous *trans*-MJ was significantly higher in the white fruit (31.7–162.2 ng g⁻¹) and decreased sharply in half and fully ripe fruit. Higher concentrations of endogenous *trans*-MJ at the white stage of strawberry fruit development followed by a decline during fruit ripening indicate that MJ may play an important role in modulating fruit ripening. Significantly increased ethylene production was measured in the fruit when MJ was applied at white, half ripe and at fully ripe stage. The application of MJ (50 μM) resulted in significantly highest ethylene production and increased activities of 1-aminocyclopropane-1-carboxylic acid (ACC) synthase and ACC oxidase as compared to all other treatments. The effect of exogenously applied MJ on ethylene production, ACC synthase and ACC oxidase activities was dependent on concentration of MJ applied and on fruit developmental stage. In conclusion, MJ in strawberry modulates fruit ripening, as its concentration is higher in white fruit and is declined with the progression of ripening and exogenous application of MJ increases ethylene production, activities of ACC oxidase and ACC synthase depending upon the concentration of MJ applied and fruit developmental stage.